

The Influence of Top Managements' Absorptive Capacity of IT Governance Knowledge on Business-IT Alignment: an Empirical Analysis

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The Influence of Top Management's Absorptive Capacity of IT Governance Knowledge on Business-IT Alignment: an Empirical Analysis

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ABSTRACT

Business-IT alignment has been the focus of both information technology (IT) practice and the academic world. Prior studies acknowledge that top management plays a critical role in ensuring IT aligns with business goals. This study offers a deeper understanding of factors which may positively influence the level of business-IT alignment. Using absorptive capacity theory as the theoretical basis, this study shows that top managements' absorptive capacity of IT governance knowledge positively and significantly contributes to higher levels of business-IT alignment. This study involves 231 top-management respondents from Australian for-profit organisations. The study's empirical finding suggests that organisations that want to have higher levels of business-IT alignment need to pay attention to their top management's absorptive capacity of IT governance knowledge by concentrating on four factors: prior relevant knowledge, communication network, communication climate, and knowledge scanning.

Key words

Top Management, absorptive capacity theory, IT governance, Business-IT alignment, structural equation modeling, Australia.

INTRODUCTION

Business-IT alignment (BITA) has been the focus of both IT practice and the academic world for more than two decades (Chan and Reich, 2007; Luftman, Kempaiah, and Nash, et al., 2005). A recent survey by *Society for Information Management* involving CIOs and IT executive from 285 US-based organisations reported that business-IT alignment was still one of the ten most important issues in IT management (Lawinski, 2011). Business-IT alignment refers to "applying IT in an appropriate and timely way and in harmony with business strategies, goals and needs." (Luftman and Brier, 1999, 109). Prior studies reported that BITA contributes positively toward corporate performances as it makes more focused and strategic use of IT (e.g., Chan and Reich, 2007; Irani, 2002; Kearns and Lederer, 2003).

Prior BITA literature indicates that top management plays a critical role in ensuring the alignment of business and IT in their organisations (see for example, Luftman and Brier, 1999; Reich and Benbasat, 2000; Edwards, 2000). For instance, Lederer and Mendelow (1989) found that BITA improved when the CEO advocates the involvement of business/IT in business and IT planning. Feeny et al. (1992) reported that successful BITA was found in organisations which have a good relationship between CEO and CIO. Limited research has been done, however, on examining factors which may facilitate higher top management support for business-IT alignment efforts.

This study proposes that for top management to contribute positively to the business-IT alignment processes, the top management needs to have adequate knowledge of IT governance. IT Governance Institute (2003), points out that the general purpose of IT governance is "to understand the issues and the strategic importance of IT, so that the enterprise can sustain its

operations and implement the strategies required to extend its activities into the future” (IT Governance Institute, 2003, p.7). In other words, the objective of IT governance is to establish and sustain business-IT alignment within an organisation. A study by Weill and Ross (2004) revealed that firms with superior IT governance practices yielded 20 percent higher profits on average compare to other firms. This argument is consistent with prior studies which examined the relationship between IT governance knowledge and BITA (e.g., Bart and Turel, 2010; Luftman and Brier, 1999; Wilkin and Chenhall, 2010).

Using absorptive capacity theory as its theoretical basis, the purpose of this study is to empirically examine the influence of top managements' absorptive capacity of IT governance knowledge on the level of business-IT alignment within organisations. Furthermore, this study examines factors which may facilitate higher level of top managements' absorptive capacity of IT governance knowledge. The use of established theory in empirical studies of BITA antecedent factors is limited and strongly encouraged by IS researchers (e.g., see Chan, Sabherwal and Thatcher, 2006).

This paper proceeds as follows. Section 2 discusses the background literature of this study. It discusses prior studies of antecedent factors of business-IT alignment and explains the absorptive capacity theory in the context of IT governance knowledge. Section 3 focuses on the model and hypothesis development, while Section 4 presents the research methods used in the study. Sections 5 and 6 discuss the results and discussion of the study. Section 7 closes with the study's conclusion, limitations and proposed future studies.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Top Management Support of Business-IT Alignment

Top management support has been acknowledged as an essential factor in achieving higher levels of business-IT alignment (BITA) (e.g., Luftman and Brier, 1999; Hussin, King, and Cragg, 2002; Chan et al., 2006). Luftman and Brier (1999) in their survey of 500 US-based companies found that top management support for IT was both an enabler and inhibitor factor of BITA. Reich and Benbasat (2000) revealed that top management's ability to understand IT issue was an essential factor of successful BITA. Furthermore, Hussin et al., (2002) in their study of alignment practices of small and medium enterprises reported that CEO commitment to IT was critical to the performance of BITA. Recently, Chan et al. (2006) indicated that BITA depends on shared domain knowledge between top management and the IS executive. There is lack of studies, however, which further discuss factors which may facilitate/encourage the top management to be supportive of any BITA efforts. This study offers further discussion on the factors which may facilitate top management to be actively involved in the BITA processes. Based on absorptive capacity theory, this study argues that higher levels of top management involvement in BITA processes can be achieved when the top management has higher levels of absorptive capacity of IT governance knowledge.

Absorptive capacity of IT governance knowledge by top management refers to the ability of top management in an organisation to recognise the value of IT governance information and knowledge, assimilate it, and apply it for competitive advantage. The 'top managements' IT governance knowledge' refers to the knowledge of IT governance frameworks possessed by top management members. This study focuses on absorptive capacity of IT governance knowledge of the top management level as IT governance should be part of boards of directors and top management's responsibility (ITGI, 2003). IT governance itself is defined as the leadership, organisational structures and processes that ensure alignment between IT and business goals (ITGI, 2003). Furthermore, 'top management members' refer to the C-suite management level (e.g., CEO, COO, CFO, and CIO) (Elbashir, Collier, and Sutton, 2011).

Absorptive Capacity (ACAP) in IT Governance Knowledge

According to Cohen and Levinthal (1990, 128), the absorptive capacity (ACAP) concept refers to the “ability of a firm to recognise the value of new, external information, assimilate it, and apply it to commercial ends”. It focuses on organisational learning and it is the result of continuous learning action. ACAP is mainly concerned with acquiring external knowledge and information (Cohen and Levinthal 1990). Implicitly, ACAP theory is the acknowledgment of the existence of internal knowledge and information within organisations. Furthermore, Jones and Craven (2001) suggested organisations should have a network of formal and informal communication to support the internal diffusion of new knowledge and technology within the organisation.

Prior ACAP literatures have proposed several constructs to operationalise ACAP. For instance, Brown (1996) offered three major components of a firm's ACAP that facilitate absorption of available internal knowledge (i.e., prior relevant knowledge, communication network, and communication climate). Further, Tu, Vonderembse, and Ragu-Nathan (2006) proposed ACAP as the organisational mechanisms that enable identification, communication, and assimilation of relevant internal and external knowledge. Applying this notion in the context of IT governance, ACAP theory provides strong components that help explain the importance of IT governance knowledge within organisations.

Following Tu et al. (2006) and Lee, Kettinger, and Fayard (2009), this study used absorptive capacity of IT governance knowledge (ACAP-ITG) as a second order factor consisting of four first-order factors (prior relevant knowledge, communication network, communication climate and knowledge scanning). The four first-order constructs represent top management's existing knowledge base of IT governance mechanisms and/or frameworks; the effectiveness of the organisation's top management communication network; the organisational communication climate in the context of IT governance implementation and operation; and, the effectiveness of the organisation's top management environment scanning in the context of IT governance. Top management was used as a proxy of organisation.

Prior relevant knowledge enables individuals in an organisation to identify and assess the value of new information (Cohen and Levinthal, 1990). Top management with an adequate base of prior IT governance knowledge are more likely to "participate more fully in IS planning and show greater support for IS." (Chan et al., 2006, p.6). Furthermore, the communications network is the "scope and strength of structural connections that brings flows of information and knowledge to different organizational units" (Tu et al. 2006, 695). Effective communication networks between top management and its subordinates are crucial for creating good relationships between business and IT executives (Lee et al., 2009; Reich and Benbasat, 2000) which in turn improves the absorptive capacity of the top management of the organisation (Cohen and Levinthal 1990).

Tu et al. (2006, 965) refers to the communication climate as the "atmosphere within the organization that defines accepted communication behavior, which may facilitate or hinder the communication processes". Nevis, DiBella, and Gould (1995) argue that an open and supportive communication climate enhances top management and employees' learning ability relative to IT governance. Improving the quality of communications mechanisms will, therefore, help support improved governance which in turn may improve the alignment between business and IT. Finally, Tu et al. (2006, 969) contend that knowledge scanning is "an organizational mechanism that enables firms to identify and capture relevant external and internal knowledge, and technology". This mechanism covers market tracking, benchmarking, and technology assessments which in turn may encourage people to actively find new information that can be applied for competitive advantage (Lee et al. 2009). In the context of IT governance, knowledge scanning enables top management when identifying and assimilating relevant external and internal IT governance knowledge.

ACAP of IT governance knowledge implies that top management has extensive knowledge of IT governance arrangements within their organisation. When top management has extensive knowledge of IT governance, we expect that knowledge will lead to enhanced IT governance within their organisations, which, in turn, positively influences the level of business-IT alignment in the organisation (Figure 1). Thus, this study proposes the following hypothesis:

Higher levels of ACAP-ITG will be positively and significantly associated with higher levels of business-IT alignment.

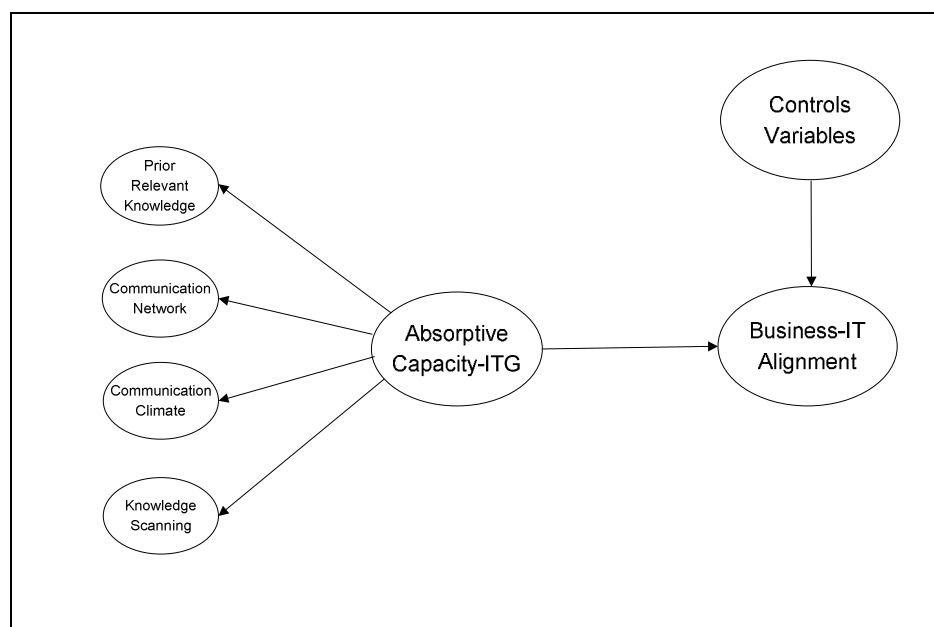


Figure 1. Research Framework

METHODS

Sample and Data Collection

This study used an online survey to collect data from the target respondents. The respondents were members of top management teams within Australian for-profit organisations. The use of perceptual data from top management members has been widely used in prior IT management research (e.g. see Tallon, Kraemer, and Gurbaxani, 2000).

The online survey was sent to a panel of respondents administered by an Australian-based survey panel vendor. Prior studies indicate that results from panel surveys do not differ significantly from those collected from random mail samples (Dennis 2001; Pollard 2002; Skinner, Autry, and Lamb, 2009). Furthermore, previous IS studies have used survey panel vendors with reliable results (Kaye and Johnson 1999; Lee, Shin, and Lee, 2009; Wetzels, Odekerken-Schroder, and van Oppen, 2009; Bulgurcu, Cavusoglu, and Benbasat, 2010). To ensure only eligible and appropriate panel members participated in the survey, there were several screening questions asked on the entry page of the survey.

Pre-test and Pilot-test

Prior to sending the online survey to the respondents, the online survey was pre and pilot-tested to acquire empirical feedback from expert participants to assess the appropriateness of the original survey instrument (Lewis, Templeton, and Byrd, 2005). The pre-test involved 12 participants comprised of 8 IT academics and 4 IT professionals. Upon receiving feedback from the participants and followed by performing several revisions on the online survey, a pilot test was conducted. The pilot test involved 10 participants comprised of 2 IT auditors, 4 IT professionals, and 4 IT academics. Again, several minor revisions were made based on the feedback from the participants.

Measures

Operational Measures of the Study Variables

The variables measurement type used in this study is a reflective factor modeling type. The usage of a reflective measurement model was consistent with prior studies and because the four first-order factors of ACAP-ITG have relatively high inter-variable correlations (Jarvis, Mackenzie, and Podsakoff, 2003). All the variables except the control variables were measured using seven-point Likert-type scales (ranging from 1='Strongly disagree' to 7='Strongly agree'). In case any item in the survey was not applicable to the respondents' organisation, 'N/A' (not applicable) was provided as an answer option.

Measuring ACAP-ITG

This variable is a reflective second-order construct which was measured using 12 items derived from prior studies (Brown, 1996; Cohen and Levinthal, 1990; Weill and Ross, 2004; ITGI, 2003; Van Grembergen et al., 2004; Tu et al, 2006; Lee et al., 2009). The 12 items represented the four first-order constructs of ACAP-ITG: prior relevant knowledge, communication network, communication climate and knowledge scanning. A series of validation processes (i.e., content validity test, pre-test-pilot test) was performed on the variable. One item (i.e., CN3) was dropped during the content validity test. A detailed explanation of the construct development of ACAP-ITG is explained in Ali, Green and Robb (2011).

Measuring Business-IT Alignment

BITA was measured using three items based on prior studies by Reich and Benbasat (1996), Campbell (2005), Luftman and Brier (1999).

Measuring Control Variable

This study uses the size of the organisation as a control variable (Hussin et al., 2002; Chan et al., 2006). Annual sales and IT budget were used as proxies of the organisation size.

RESULTS

The online survey gathered two hundred and thirty-one (n=231) valid responses. In terms of industry type, the highest percentages of respondents were from property/business services and retail/trade industry (13.4 percent and 13 percent, respectively). In relation to respondents' titles, 45 percent of respondents were managing directors and 17.7 percent were general managers. For years of experience, 36 percent of respondents had 0-5 years work experience and 34.6 percent respondents had 5.1-10 years of experience

Data Preparation

Prior to the main data analysis, several tests were conducted to ensure the collected data satisfied certain multivariate assumptions, such as, normality, homoscedasticity, linearity, multicollinearity and singularity, and non-sample bias. Analysis

using Z-scores, skewness and kurtosis, scatter plots examination, and independent group T-tests (Ghiselli, et al., 1981; Hair et al., 1998) revealed no concerns with violations of the statistical assumptions.

Measurement Properties

Exploratory Factor Analysis (EFA)

To ensure initial construct validity, two separate EFAs were performed on the ACAP-ITG and BITA constructs. Table 1 shows the results of the two EFAs and means and standard deviation of each of the indicators. The results indicate that all indicators of the ACAP-ITG loaded highly (>0.6) on the four-sub constructs of the ACAP-ITG. Whereas, all three indicators of BITA loaded highly on one factor that is BITA construct.

Indicator	Mean	S.D	Prior Relevant Knowledge (PK)	Communication Network (CN)	Communication Climate (CC)	Knowledge Scanning (KS)	Business-IT Alignment (BITA)
PK1	3.80	2.39	0.859	0.114	0.211	0.268	-
PK2	3.93	2.25	0.857	0.239	0.182	0.299	-
PK3	3.85	2.39	0.807	0.318	0.171	0.305	-
CN1	3.56	2.45	0.333	0.672	0.396	0.300	-
CN2	4.42	2.49	0.319	0.726	0.393	0.252	-
CC1	4.29	2.49	0.238	0.311	0.804	0.209	-
CC2	4.48	2.52	0.168	0.182	0.896	0.225	-
CC3	4.43	2.50	0.155	0.209	0.831	0.336	-
KS1	4.06	2.43	0.260	0.180	0.285	0.802	-
KS2	4.06	2.26	0.325	0.165	0.314	0.788	-
KS3	4.00	2.33	0.384	0.267	0.233	0.763	-
BITA1	5.04	1.93	-	-	-	-	0.851
BITA2	5.29	1.81	-	-	-	-	0.873
BITA3	4.91	2.13	-	-	-	-	0.862

Table 1. Results of Exploratory Factor Analysis

Reliability Analysis

Cronbach's alpha and composite reliabilities (CR) were calculated to examine the overall reliability of the latent construct indicators (Table 2). All of the sub-constructs' Cronbach alphas of both constructs were greater than 0.6. The CR results are all above the minimum 0.80. These results indicate that all latent construct indicators were reliable and consistent. The means and standard deviations of the constructs are also provided in Table 2.

Variables	Mean	S.D	Alpha	C.R	PK	CN	CC	KS
Prior Relevant Knowledge (PK)	3.86	2.20	0.930	0.950				
Communication Network (CN)	3.99	2.26	0.801	0.909	0.683**			
Communication Climate (CC)	4.40	2.34	0.924	0.952	0.508**	0.734**		
Knowledge Scanning (KS)	4.04	2.14	0.904	0.940	0.695**	0.684**	0.636**	
Business-IT Alignment (BITA)	5.08	1.69	0.827	0.896	0.426**	0.367**	0.303**	0.408**
**. Correlation is significant at the 0.01 level (2-tailed).								

Table 2. Descriptive Statistics, Reliability Tests, and Pearson Correlations

Measurement Model

Confirmatory factor analysis using AMOS 18 was performed to assess the dimensionality, convergent validity, and discriminant validity of the ACAP-ITG and BITA measures. The adequacy of the indicators was assessed via their loadings to their respective constructs. The loadings of the indicators were greater than 0.744 (Chin, Johnson, and Schwarz, 2008), indicating that all are reliable indicators of the four first-order constructs of ACAP-ITG and BITA (Table 3).

Structural Evaluation Model

In Figure 2, the structural link from ACAP-ITG to BITA is significant (0.509, $p < 0.05$). The model also has a satisfactory fit which suggest that the model is acceptable and fits the data well (Hu and Bentler 1999; Byrne 2001).

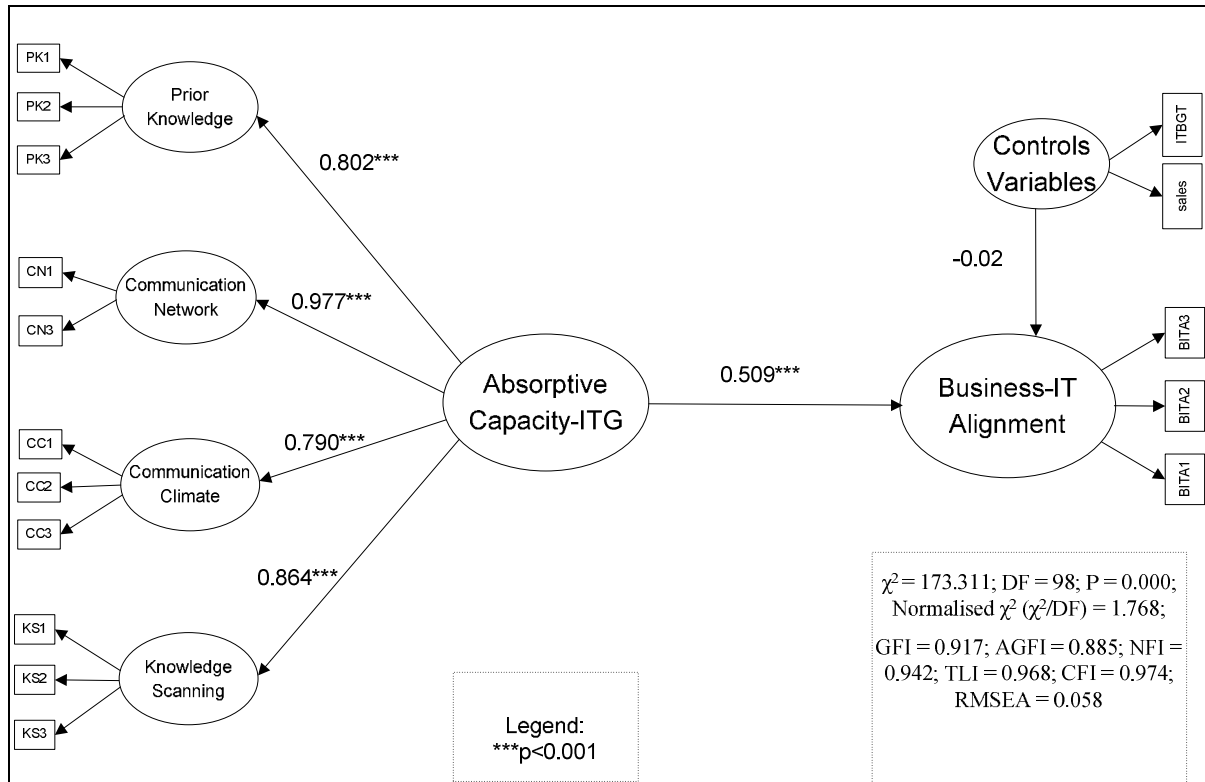


Figure 2. Empirical Results: ACAP-ITG Knowledge—IT Alignment (AMOS Results)

			Estimate	S.E.	C.R.	P	Loading
PK	←	ACAP-ITG	1.623	0.136	11.915	***	0.802
CN	←	ACAP-ITG	1.965	0.14	13.992	***	0.977
CC	←	ACAP-ITG	1.709	0.144	11.907	***	0.790
KS	←	ACAP-ITG	1.718	0.139	12.365	***	0.864

BITA	←	ACAP-ITG	0.848	0.128	6.633	***	0.509
BITA	←	CTRL	0	0	-0.131	0.896	
PK3	←	PK	1.084	0.057	19.1	***	0.918
PK2	←	PK	1.057	0.052	20.203	***	0.952
PK1	←	PK	1				0.847
CN2	←	CN	1.005	0.074	13.645	***	0.812
CN1	←	CN	1				0.823
CC3	←	CC	1.036	0.055	19.006	***	0.899
CC2	←	CC	1.076	0.054	19.906	***	0.924
CC1	←	CC	1				0.870
KS3	←	KS	1.061	0.063	16.749	***	0.907
KS2	←	KS	1.007	0.062	16.279	***	0.887
KS1	←	KS	1				0.821
BITA3	←	BITA	1				0.784
BITA2	←	BITA	0.896	0.079	11.269	***	0.824
BITA1	←	BITA	0.861	0.081	10.653	***	0.744

Table 3. Regression Weights and Loadings

DISCUSSIONS AND CONTRIBUTIONS

The data analysis (Table 3) provides support for the proposed hypothesis. The path between absorptive capacity of IT governance knowledge (ACAP-ITG) and business-IT alignment (BITA) shows that critical ratio (CR) is greater than 1.96 (CR = 6.663) and p-value less than 0.05. This indicates that higher levels of ACAP-ITG are positively and significantly associated with business-IT alignment. This result is consistent with prior studies (Luftman and Brier, 1999; Reich and Benbasat, 2000; Baker, 2004; Feeny et al., 1992; Lederer and Menelow, 1989; Hussin et al, 2002; Chan et al., 2006; DeHaes and Van Grembergen, 2009). Reich and Benbasat (2000) reported that domain knowledge shared by business and IT executives determine the success of business-IT alignment. The shared knowledge enhanced effective communication between the two groups which in turn increased the level of business-IT alignment. Sledgianowski and Luftman (2005) cited in Chan and Reich (2007, pp. 306) further acknowledged that “communication should be a fundamental and regularly occurring task of all managers and employees. For alignment, business-IT communication should regularly occur and be pervasive throughout the organization.”

Moreover, the results indicate that the four first-order factors of ACAP-ITG represent an adequate representation of the ACAP-ITG construct. The strongest contribution of the four-first order factors was the communication network and followed by knowledge scanning, communication climate and prior relevant knowledge. These findings indicated the relative importance of the four-first order factors related to ACAP-ITG which can be used by organisations seeking their top management to be actively involved in business-IT alignment efforts.

This study makes two important contributions. First, from a theoretical perspective, this study provides theoretically robust empirical evidence, of the link between top management's absorptive capacity of IT governance knowledge and level of business-IT alignment. Second, the study's findings provide a practical guide to organisations seeking higher level of top management support in pursuit of improved business-IT alignment.

CONCLUSIONS, LIMITATIONS AND FUTURE STUDIES

This study examined the antecedent factor, absorptive capacity of IT governance knowledge, and its relationship with business-IT alignment. The study shows that higher levels of absorptive capacity of IT governance knowledge are positively and significantly associated with higher levels of business-IT alignment. This result indicates that organisations should pay

close attention to the four sub-constructs of ACAP-ITG: prior relevant knowledge, communication network, communication climate and knowledge scanning.

There are several potential limitations of this study. First, the construct (i.e., ACAP-ITG) is a subjective and indirect measure (based upon respondents' perceptions) and, hence, is not necessarily as strong as direct objective measures. This limitation is considered necessarily unavoidable, as the research methodology adopted is a questionnaire approach in the absence of objective measures. Second, the measurement instrument developed in this study for ACAP-ITG should be considered a first iteration that should undergo further empirical testing to improve its efficacy in IT investment studies. Third, the sampling frame in this study was limited to the panel group that worked with the survey firm. However, the use of comprehensive screening criteria to facilitate the selection of appropriate participants helps to mitigate any representativeness problem. Readers should consider, therefore, the context of this study when interpreting the study's results (Lee et al., 2009). Finally, the business-IT alignment construct used in this study addresses but one type of business-IT alignment. Prior studies suggest other approaches to measure the business-IT alignment such as weighted Euclidean distance (Sabherwal and Kirs, 1994), Strategic Orientation of IS (Chan et al., 1997), Strategic Orientation of Business Enterprise (Venkatraman, 1989) and shared cognition (Tan and Gallupe, 2006). For future studies, addressing those four limitations may result in higher external and internal validity of the study's results.

REFERENCES

1. Ali, S., Green, P., and Robb, A. (2011) Top Management IT Governance Knowledge: a Construct Development, in *Proceedings of the 22nd Australasian Conference on Information Systems (ACIS)*, Sydney, Australia.
2. Bart, C., and Turel, O. (2010) IT and the Board of Directors: An empirical Investigation into the "Governance Questions" Canadian Board Members Ask about IT, *Journal of Information Systems*, Vol. 24, No. 2, fall, 147-172.
3. Brown, S.A. (1996) Knowledge, Communication, and Progressive Use of Information Technology. In *Proceedings of the 2nd Americas Conference on Information Systems*, of the Association for Information Systems, 235-237.
4. Bulgurcu, B., Cavusoglu, H., and Benbasat, I. (2010) Effect of online social networking on employee productivity, *MIS Quarterly*, Vol.: 34, Issue: 3, 523-548
5. Chan, Y.E., Huff, S.L., Barclay, D.W., and Copeland, D.G. (1997) Business Strategic Orientation, Information Systems Strategic Orientation, and Strategic Alignment, *Information Systems Research*, 8(2): 125-150.
6. Chan, Y.E. and Reich, B.H. (2007) State of the Art--IT Alignment: what have we learned? *Journal of Information Technology*, 22, 297-315.
7. Chan, Y.E., Sabherwal, R. and Thatcher, J.B. (2006) Antecedents and Outcomes of Strategic IS alignment: An Empirical Investigation, *IEEE Transactions on Engineering Management*, Vol. 53, No.1, February.
8. Chin, W.C., Johnson, N., and Schwarz, A. (2008). A fast approach to measuring technology acceptance and other constructs, *MIS Quarterly*, Vol. 32, No. 4, 687-703.
9. Chin, W., and Gopal, A. (1995) Adoption intention in GSS: relative importance of beliefs, *The Data BASE for Advances in Information Systems*, 26 (2 & 3) 1995, 42-64.
10. Cohen, W.M., and Levinthal, D.A. (1990) Absorptive Capacity: A New Perspective on Learning and Innovation, *Administrative Science Quarterly*, (35), 128-152.
11. DeHaes and Van Grembergen. (2009) Exploring the Relationship between IT Governance Practices and Business/IT Alignment through Extreme Case Analysis in Belgian Mid-to-large Size Financial Enterprises, *Journal of Enterprise Information Management*, Vol. 22 No.5, 615-637.
12. Dennis, J.M. (2002) Are internet panels creating professional respondents? *Marketing Research*, Vol. 13 No.2, 34-8.
13. Edwards, B.A. (2000) Chief Executive Officer Behavior: The Catalyst for Strategic Alignment, *International Journal of Value-Based Management*, 13 (1): 47-54.
14. Elbashir, M, Collier, P., Sutton, S. (2011) The Role of Organizational Absorptive Capacity in Strategic Use of Business Intelligence to Support Integrated Management Control Systems, *The Accounting Review*, 86 (1).
15. Feeny, D.F., Edwards, B.R. and Simpson, K.M. (1992) Understanding the CEO/CIO Relationship, *MIS Quarterly* 16 (4): 435-448.
16. Ghiselli EE, Campbell JP, Zedeck S. (1981) Measurement Theory for the Behavioural Sciences. W. H. Freeman and Co., New York.

17. Hair, J.F., R.E. Anderson, R.L. Tatham, and W.C. Black. (1998) *Multivariate Data Analysis* 5th Ed. Upper Saddle River, NJ: Prentice Hall.
18. Hussin, H., King, M., and Cragg, P. (2002) IT Alignment in Small Firms, *European Journal of Information Systems*, Vol. 11, No. 2, pp. 108-27.
19. Hu, L. T., and Bentler, P. M. (1995) Evaluating Model Fit. In *Structural Equation Modeling: Concepts, Issues, and Applications*, R. H. Hoyle (ed.), Thousand Oaks, CA: Sage Publications, pp. 76-99.
20. Institute, IT Governance. (2003). Board Briefing on IT Governance. IT Governance Institute. (January 2009). Available at: http://www.isaca.org/Content/ContentGroups/ITGI3/Resources1/Board_Briefing_on_IT_Governance/26904_Board_Briefing_final.pdf.
21. Information Technology Governance Institute (ITGI). (2008), *ITG Global Status Report-2008*. ITG Institute, www.ITGI.org.
22. Irani, Z. (2002) Information Systems Evaluation: Navigating through the Problem Domain, *Information Management*, 40 (1): 11-24.
23. Jarvis, C. B., Mackenzie, S. B., and Podsakoff, P. M. (2003) A Critical Review of Construct Indicators and Measurement Model Misspecification in Marketing and Consumer Research, *Journal of Consumer Research*, 30 (2), 199-218.
24. Jones, O., and Craven, M. (2001) Expanding Capabilities in a Mature Manufacturing Firm: Absorptive Capacity and the TCS, *International Small Business Journal*, 19 (3), 39-55.
25. Kaye, B. K., and Johnson, T. J. (1999) Research Methodology: Taming the Cyber Frontier, *Social Science Computer Review* (17), 323-337.
26. Lawinski, J. (2011) IT Management Slideshow: Business, IT Alignment a Top Priority for CIOs, *CIOInsight*, available at: <http://www.cioinsight.com/c/a/IT-Management/Business-IT-Alignment-a-Top-Priority-for-CIOs-547064/>, accessed at 1 Feb, 2011.
27. Lederer, A.L. and Mendelow, A.L. (1989) Coordination of Information Systems Plans with Business Plans, *Journal of Management Information Systems* 6 (2): 5-19.
28. Lee, L., Kettinger, W., Fayard, L., and Leitch, R. (2009). The Mediating of Absorptive Capacity on Inter-organizational Information Sharing. In *Proceedings of International Research Symposium on Accounting Information Systems*.
29. Lee, S., Shin, B., and Lee, H.G. (2009) Understanding Post-adoption Usage of Mobile Data Services: The Role of Supplier-side Variables, *Journal of the Association for Information Systems*, Vol. 10, Issue 12, 860-888, December.
30. Lewis, B.R., Templeton, G.F., and Byrd, T.A. (2005) A methodology for construct development in MIS research, *European Journal of Information Systems*, 14, 388-400.
31. Luftman, J.N. and Brier. (1999) Achieving and Sustaining Business-IT Alignment, *California Management Review*, Vol. 42, No. 1, 109-122.
32. Luftman, J.A., Kempaiah, R. and Nash, E. (2005) Key Issues for IT Executives 2005, *MIS Quarterly Executive* 5(2): 81-101.
33. Nevis E.C, DiBella A.J., and Gould, J.M. (1995) Understanding Organizations as Learning Systems, *Sloan Management Review*, 73-85.
34. Pollard, W.E. (2002) Use of consumer panel survey data for public health communication planning: an evaluation of survey results, *American Statistical Association 2002 Proceedings of the Section on Health Policy Statistics*, 2720-4.
35. Ray, G., Muhanna W.A., Barney, J.B. (2005) Information Technology and the Performance of the Customer Service Process: a Resource-Based Analysis, *MIS Quarterly*, 29 (4), 625-652.
36. Reich, B.H. and Benbasat, I. (2000), Factors that Influence the Social Dimension of Alignment between Business and Information Technology Objectives, *MIS Quarterly*, Vol. 24, No. 1, 81-114.
37. Sabherwal, R. and Kirs, P. (1994) The Alignment between Organizational Critical Success Factors and Information Technology Capability in Academic Institutions, *Decision Sciences* 25 (2): 301-330.
38. Skinner, L.R., Autry, C.W., and Lamb, C.W. (2009) Some measures of inter-organizational citizenship behaviours: scale development and validation, *The International Journal of Logistics and Management*, Vol. 20, No. 2, 228-242.

39. Tan, F.B. and Gallupe, B. (2006) Aligning Business and Information Systems Thinking: A cognitive approach, *Engineering Management IIE Transactions*, 53 (2): 223-237.
40. Tallon P.P., Kraemer K.L., and Gurbaxani V. (2000) Executives' Perceptions of the Business Value of Information Technology: A Process-Oriented Approach, *Journal of Management Information Systems*, 16 (4): 145-173.
41. Teo, T.S.H. and Ang, J.S.K. (1999) Critical Success Factors in the Alignment of IS Plans with Business Plans, *International Journal of Information Management*, 19 (1): 173-185.
42. Tu Q. Vonderembse, M.A., Ragu-Nathan, T.S., and Sharkey, T.W. (2006) Absorptive Capacity: Enhancing the Assimilation of Time-Based Manufacturing Practices, *Journal of Operation Management*, 24: 692-710.
43. Van Grembergen, W., De Haes, S., and Guldentops, E. (2004). Structures, Processes and Relational Mechanisms for IT Governance. In Grembergen (Ed.), *Strategies for Information Technology Governance*, 1-36: Idea Group Publishing.
44. Venkatraman, N. (1989) The Concept of Fit in Strategy Research: Toward verbal and statistical correspondence, *Academy of Management Review*, 14(3): 423-444.
45. Vitale, M.R., Ives, B. and Beath, C.M. (1986) Linking Information Technology and Corporate Strategy: An organizational View, in *Proceedings of the 7th International Conferences on Information Systems*, San Diego, CA, 256-276.
46. Weill, P., and Ross, J. (2004) IT Governance: How Top Performers Manage IT Decision Rights for Superior Results. Boston: Harvard Business School Press.
47. Wetzels, M., Odekerken-Schroder, G., and van Oppen, C. (2009). Using PLS Path Modeling for Assessing Hierarchical Construct Models: Guidelines and Empirical Illustration, *MIS Quarterly*, Vol. 33, No. 1, 177-195/March.
48. Wilkin, C. L., and Chenhall, R.H. (2010) A Review of IT Governance: A Taxonomy to Inform Accounting Information Systems, *Journal of Information Systems*, Vol. 24, No.2, Fall, 107-146.